RF Exposure Evaluation Report

1. Product Information

FCC ID	2A5UA-W01
Product Name	wireless charger
Model Number	W01
Series Models	W02, W03, W05, W06
Power Supply	DC 5V/2A or DC 9V/1.67A from adapter
Maximum Rated Power of WPT	10W Max.
Modulation Type	ASK
Operation Frequency	From 110KHz~205KHz
Antenna Type	Coil Antenna
Hardware version	D0520211111
Software version	V1.0
Exposure category	General population/uncontrolled environment
Test Sample ID:	CTA220321011-1#
EUT Type	Production Unit
Device Type	Mobile Device

2. Evaluation Limit

2.1 Refer Evaluation Method

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

According KDB 680106 D01 RF Exposure Wireless Charging App v03r01

2.2 Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	(900/f)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	(180/f)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

F=frequency in MHz

*=Plane-wave equivalent power density

3. Test Facility and Accreditation

Shenzhen CTA Testing Technology Co., Ltd.

Address: Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community,Fuhai Street, Bao'an District, Shenzhen, China

FCC-Registration No.: 517856 Designation Number: CN1318.

A2LA-Lab Cert. No.: 6534.01

4. Test Instruments list

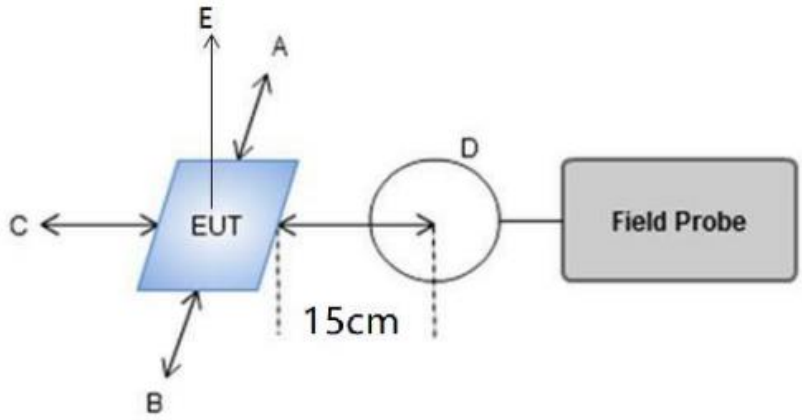
Test Equipment	Manufacturer	Model No.	SN.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
Exposure Level Tester	Narda	ELT-400	N-0231	2021/11/2	2022/11/01
Magnetic field probe 100cm^2	Narda	ELT probe 100cm^2	M0675	2021/11/2	2022/11/01

5. Equipment Approval Considerations

Requirements of KDB 680106 D01	Yes / No	Description
Power transfer frequency is less than 1 MHz	Yes	The device operate in the frequency range 110KHz~205KHz
Output power from each primary coil is less than 15 watts	Yes	The maximum output power for each primary coil is 10W.
The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.	Yes	The transfer system includes only one primary coils.
Client device is placed directly in contact with the transmitter.	Yes	Client device is placed directly in contact with the transmitter.
Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	Yes	Mobile exposure conditions only
The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.	Yes	The EUT H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

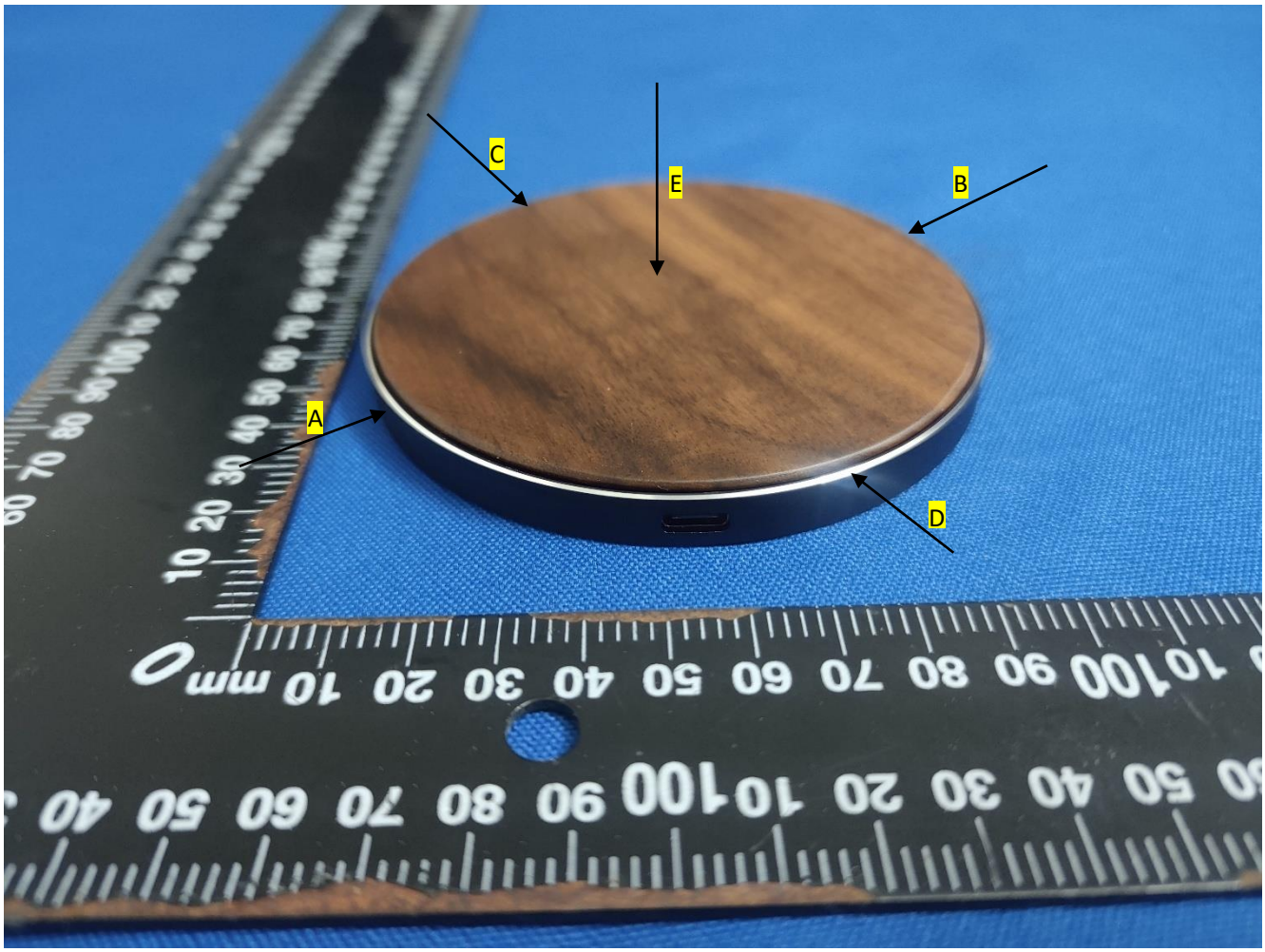
6. TEST CONDITIONS AND RESULTS

6.1 Test Setup



Note: A, B, C, D, E for five surfaces of the product.

The surfaces of the EUT is defined as figure below:



6.2 Measurement Procedure

a) The RF exposure test was performed on 360 degree turn table in anechoic chamber.

b) The measurement probe was placed at test distance (10cm) which is between the edge of the charger and the geometric centre of probe.

c) The turn table was rotated 360d degree to search of highest strength.
d) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.
e) The EUT were measured according to the dictates of KDB 680106 D01 RF Exposure Wireless Charging App v03.

6.3 Description of the test mode

Equipment under test was operated during the measurement under the following conditions:

☒ Charging and communication mode

Test Conditions	Description	
TM1	AC/DC Adapter (9V/1.67A) + EUT + Wireless Charger tester (Load 10W)	Recorded
TM2	AC/DC Adapter (9V/1.67A) + EUT + Wireless Charger tester (Load 7.5W)	Recorded
TM3	AC/DC Adapter (9V/1.67A) + EUT + Wireless Charger tester (Load 5W)	Recorded
TM4	AC/DC Adapter (5V/2A) + EUT + Wireless Charger tester (Load 10W)	Pre-tested
TM5	AC/DC Adapter (5V/2A) + EUT + Wireless Charger tester (Load 7.5W)	Pre-tested
TM6	AC/DC Adapter (5V/2A) + EUT + Wireless Charger tester (Load 5W)	Pre-tested

6.4 Test Result of E and H field Strength

E-Field Strength at 15 cm from the edges surrounding the EUT and 15cm from the top surface of the EUT

Power Load	Unit	Frequency Range (MHz)	Measured E-Field Strength Values (V/m)					FCC E-Field Strength 50% Limits (V/m)	FCC E-Field Strength Limits (V/m)
			Test Position A	Test Position B	Test Position C	Test Position D	Test Position E		
10W	v/m	0.119	44.11	45.62	44.86	45.99	77.29	307.0	614.0
7.5W	v/m	0.119	38.45	36.95	38.45	39.96	70.12	307.0	614.0
5W	v/m	0.119	30.54	25.64	28.28	28.65	61.83	307.0	614.0

Note: V/m= A/m *377

H-Field Strength at 15 cm from the edges surrounding the EUT and 15cm from the top surface of the EUT

Power Load	Unit	Frequency Range (MHz)	Measured H-Field Strength Values (A/m)					FCC H-Field Strength50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
			Test Position A	Test Position B	Test Position C	Test Position D	Test Position E		
10W	uT	0.119	0.146	0.151	0.149	0.153	0.256	--	--
10W	A/m	0.119	0.117	0.121	0.119	0.122	0.205	0.815	1.63
7.5W	uT	0.119	0.128	0.123	0.128	0.133	0.233	--	--
7.5W	A/m	0.119	0.102	0.098	0.102	0.106	0.186	0.815	1.63
5W	uT	0.119	0.101	0.085	0.094	0.095	0.205	--	--
5W	A/m	0.119	0.081	0.068	0.075	0.076	0.164	0.815	1.63

Note:A/m=uT/1.25

H-Field Strength at 20cm from the top surface of the EUT

Power Load	Unit	Frequency Range (MHz)	Measured H-Field Strength Values (A/m)	FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
			Test Position E		
10W	uT	0.119	0.234	--	--
10W	A/m	0.119	0.187	0.815	1.63
7.5W	uT	0.119	0.209	--	--
7.5W	A/m	0.119	0.167	0.815	1.63
5W	uT	0.119	0.169	--	--
5W	A/m	0.119	0.135	0.815	1.63

Note:A/m=uT/1.25

7. Conclusion

A minimum safety distance of at 15 cm surrounding the device and 20 cm above the top surface of the device is required when the device is charging a smart phone. The detected emissions with a distance of 15 cm surrounding the device and 20 cm above the top surface of the device are below the limitations according to FCC KDB 680106 D01 Section 3. RF Exposure Requirement Clause 3.

8. Test Setup Photos of the EUT

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